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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,004	09/24/2004	Jacobus Mathias Hendrikus Dirx	TS1168US	7659

7590
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Shell Oil Company
Intellectual Property
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09/19/2007

EXAMINER

HANOR, SERENA L

ART UNIT	PAPER NUMBER
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1709

MAIL DATE	DELIVERY MODE
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09/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,004	Applicant(s) DIRKX ET AL.	
	Examiner Serena L. Hanor	Art Unit 1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/24/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892). | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/24/2004</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement contains a listing of the International Search Report. Because the International Search Report contains only a listing of reference(s), it has not been considered as part of the disclosure of the applicant and should not be listed as part of the OTHER DOCUMENTS under the IDS. However, any search report that contains an analysis regarding prior art and the instant claims should be listed.

Priority

2. It is noted that this application appears to claim subject matter disclosed in prior Application No. 60/368,066, filed on March 27, 2002. A reference to the prior application must be inserted as the first sentence(s) of the specification of this application or in an application data sheet (37 CFR 1.76), if applicant intends to rely on the filing date of the prior application under 35 U.S.C. 119(e), 120, 121, or 365(c). See 37 CFR 1.78(a). For benefit claims under 35 U.S.C. 120, 121, or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of all nonprovisional applications. If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference to the prior application must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after

November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its

inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Oath/Declaration

3. The Oath incorrectly classifies the provisional application no. 60/368,066 as a Prior Foreign Application instead of a United States provisional application, under 35 U.S.C. 119(e). Furthermore, the PCT application no. PCT/EP2003/003244 is not correctly classified, under 35 U.S.C. 365.

Specification Objections

4. The disclosure is objected to because of the following informalities:

- | | | |
|------|-------------|---|
| p. 1 | line 3 | a FCC |
| p. 1 | lines 5-14 | unclear sentence |
| p. 2 | line 5 | by |
| p. 2 | line 23 | regenerator temperature is not a practical instrument |
| p. 2 | lines 31-32 | comma splice |
| p. 3 | line 21 | comma splice |
| p. 3 | line 23 | has to its object |
| p. 3 | line 25 | comma splice |
| p. 3 | line 26 | in a |
| p. 3 | line 30 | resides |
| p. 3 | line 32 | a FCC |

Art Unit: 1709

- p. 4 line 7 unit increasing the capacity
- p. 4 line 10 an unit
- p. 5 lines 8-11 a regenerator.....of the reactor unit
- p. 5 lines 14-15 upstream of the transport unit
- p. 5 lines 17-18 Figures, fragment
- p. 5 lines 22-23 continuously is transferred
- p. 5 line 29 on
- p. 5 lines 32-33 which upstream is provided with a cooling unit
- p. 6 line 1 such as known to the skilled person
- p. 6 line 2 ;
- p. 6 line 5 The air that is sucked
- p. 6 line 15 ; ;
- p. 6 line 23 Figure
- p. 7 line 9 300,000 \$/year

Appropriate correction is required.

Claim Objections

5. Claims 1, 10 are objected to because of the following informalities:

- Cl. 1 line 2 a FCC
- line 4 coke means
- Cl. 10 line 4 a FCC
- line 6 coke means

Appropriate correction is required.

Art Unit: 1709

6. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,235,817 (hereafter, US'817) in view of US 5,043,517 (hereafter, US' 517) and US 5,002,915 (hereafter, US'915).

Claims 1-16 are drawn to a process for combusting coke of a coke-containing FCC catalyst in a regeneration unit of an FCC unit, whereby the thermal deactivation of

the catalyst is decreased and the catalyst is regenerated. Furthermore, a regenerator apparatus for performing the process is also claimed.

US'817 is drawn to a process for the control of sulfur oxide in emissions to the atmosphere from the combined flue gases of selective vaporization and FCC cracking. The selective vaporization of crude petroleum leaves a solid material behind, which is contacted with air to burn off carbonaceous material and produce the first products of combustion. (Abstract and Claim 1). US'817 differs from the instant claims in that its ultimate goal is to reduce the sulfur oxide content in the waste gases from the FCC regenerator. The sulfur containing hydrocarbon charge is obtained via the selective vaporization of crude petroleum, which is also not mentioned in the instant claims. Furthermore, it recites the use of heat exchangers to decrease stream temperatures, but it does not specifically mention the use of an industrial chiller or the temperature differential of the air. Finally, the flue gas is cooled during the process but not specifically before, the step of reducing the water content of the flue gas is not disclosed, and it does not enter the process via an air blower.

US'517 is drawn to the continuous conversion of light olefin gas feed to heavier hydrocarbons via a medium pore molecular sieve zeolite catalyst. The catalytic reaction causes the conversion of the light olefins to heavier hydrocarbons, the deposition of coke by-product on the catalyst, and the absorption of hydrocarbon product on the catalyst. The deposited coke causes the partial deactivation of the catalyst, which is stripped and then transferred to a catalyst regeneration zone. There, the catalyst is maintained in a fluidized bed and contacted with an oxygen containing gas to effect

combustion of the coke and removal of the coke from the catalyst and regeneration of the catalyst. During the regeneration process, the oxygen containing regeneration gas is cooled to 27-49°C, and its free water content is removed prior to being fed to the regenerator such that it maintains the temperature and water partial pressure in the regeneration zone (col. 18 line 67). (Abstract and Claim 13).

US'915 is drawn to a process for regenerating solid particulate catalyst used in fixed bed hydrocarbon conversion processes. Regeneration is achieved using a portion of a flue gas stream to regenerate catalyst and preheat feedstock (Abstract). Flue gas obtained from the FCC regeneration zone is mixed with air to provide an appropriate oxidizing stream composition (col. 2 lines 63-68). The air stream is provided by air from the main air blower outlet (col. 3 line 1). The flue gas contains substantial amounts of water vapor representing about 10 % vol of the flue gas. The water partial pressure in the flue gas is about 3-5 psia. If required, the water partial pressure can be reduced to about 1 psia by cooling the flue gas and removing the condensed water before using the flue gas for fixed bed regeneration. (Abstract and col. 4 lines 43-50).

It would have been obvious to one of ordinary skill in the art to modify the process recited by US'817 to remove the condensed water, as stated in US'517. Furthermore, the modification of US'817 in view of US'915 to obtain air at room temperature or greater via an air blower would also have been obvious. Additionally, the step of cooling the regeneration gas, or flue gas, to 27-49°C, which is below the dew point of water and supports the instant claimed temperature differential of 10-35°C, and

Art Unit: 1709

thereby condensing the water in order to remove it from the gas prior to feeding the gas to the regenerator would have been obvious.

One would have been motivated to make such modifications for economic reasons. A cooling step increases the capacity of an FCC regenerator. Furthermore, the decreased water content is beneficial for the average lifetime of the catalyst, since less catalyst would be irreversibly destroyed by hydrothermal deactivation. Ultimately, less new catalyst would have to be introduced, because the existing catalyst could be effectively regenerated for reuse.

Conclusion

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Serena L. Hanor whose telephone number is (571) 270-3593. The examiner can normally be reached on Monday - Thursday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1709

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SLH

VICKIE Y. KIM
SUPERVISORY PATENT EXAMINER

